

DETAILED ACTION

Status of the Application

Claims 2, 8 and 10 have been cancelled.

Claims 1, 3-7, 9 and 11 are allowed.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney William Brooks, Reg. No. 34,129 on the 18 of March, 2010, to amend claims 1, 3, 9 and 11.

The application has been amended as follows:

1. (Examiner amended) An optical functional waveguide comprising:
 - a substrate;
 - a clad formed on said substrate;
 - a core which is formed in said clad and serves as an optical path for propagating light ;
 - a plurality of lens-shaped groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and being filled with a material having a refractive index temperature coefficient different from that of said core; and

a heater electrode interposed between said plurality of lens-shaped groove structures provided along the optical path for controlling a temperature of said material and a divergence angle of the propagating light.

3. (Examiner amended) An optical functional waveguide according to claim 1, wherein at least one of the end faces of said plurality of lens-shaped groove structures is tilted from a position perpendicular to the optical path.

9. (Examiner amended) An optical functional waveguide according to claim 1, wherein said lens-shaped groove structure is provided at a slab waveguide side of a coupling portion of the slab waveguide and a single mode waveguide.

11. (Examiner amended) An optical functional waveguide comprising:

a substrate;

a clad formed on said substrate;

a core which is formed in said clad and serves as an optical path;

a plurality of wedge-shaped groove structures formed so as to align at a predetermined interval along the optical path and fragmentize the optical path and being filled with a material having a refractive index temperature coefficient different from that of said core; and

a heater electrode means interposed between said plurality of wedge-shaped groove structures provided along the optical path for controlling a temperature of said material and a guide direction of light.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

The prior art does not show or fairly suggest the claimed invention of an optical functional waveguide having the claimed limitations, wherein a rejection under 35 USC 102 or 103 would be improper.

Clap et al. (US. Pat. 6,459,533) and **Kamei et al.** (US. Pub. 2004/0126052) are the most relevant prior arts of record.

Applicant's arguments with respect to claims 1, 3-7, 9 and 11, have been fully considered and are persuasive, therefore, the Examiner withdraws the current rejections for the following reasons. **Clap's** optical filter system does not teach lens-shaped grooves or wedge-shaped grooves structure. On the other hand, **Kamei et al.** teach an optical waveguide with plurality of lens-shaped grooves and/or wedge-shaped grooves structure. However, there is no suggestion or teaching that a heater could or should be disposed between the lens-shaped groove structures as claimed.

Thus, **Clap et al.** and **Kamei et al.** alone or in combination, however, still fail to teach that a plurality of lens-shaped/wedge-shaped groove structures, wherein a heater electrode is interposed between said plurality of groove structures.

Therefore, Claims 1 and 11 are allowable as distinguishable over the prior art of record because of at least the reasons stated above. It is this examiner's position that prior art taken alone, fails to disclose or render obvious the claim invention.

Claims 3-7 and 9 are allowable as dependent Claims of Claim 1.

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Lam whose telephone number is 571-272-9790. The examiner can normally be reached on M - F 08:30 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Robinson can be reached on 571-272-2319. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Hung Lam/
Patent Examiner, Art Unit 2883

/CHARLIE PENG/
Primary Examiner, Art Unit 2883

CP/hl